

A clinical practice guide: What HIV care providers need to know about HIV pregnancy planning to optimize preconception care for their patients

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This clinical practice guide has been developed to support human immunodeficiency virus (HIV) care providers' use of the 2018 Canadian HIV Pregnancy Planning Guidelines (CHPPG) in their work with people and couples affected by HIV. HIV pregnancy planning has changed considerably in the last decade and requires a multidisciplinary team, and HIV care providers are often at the forefront of the team. It is, therefore, important to have clear guidance on how to provide HIV pregnancy planning care. This Clinical Practice Guide is intended for both primary and specialty HIV care providers, including doctors, nurses, and nurse practitioners. We have repackaged the 2018 CHPPG's 36 recommendations into five standards of care for ease of use. We have also included an initial algorithm that can be used with each patient to direct discussions about their reproductive goals. Pregnancy and parenting are increasingly normalized experiences in the lives of people and couples affected by HIV. While conception used to be a complicated decision, often heavily focused on minimizing the risk of HIV transmission, the current evidence supports more universal counselling and supports for HIV pregnancy planning. HIV care providers have a responsibility to be familiar with the unique considerations for pregnancy planning when supporting their patients. This counselling is critical to optimizing reproductive health outcomes for all people affected by HIV, including those who wish to prevent pregnancy.

KEY WORDS: clinical guidance, fertility, HIV, human immunodeficiency virus, parenting, preconception, pregnancy, pregnancy planning

Les présentes directives de pratique clinique visent à soutenir l'utilisation des *Lignes directrices canadiennes en matière de planification de la grossesse en présence du VIH* 2018 par les dispensateurs de soins aux personnes et aux couples touchés par le virus d'immunodéficience humaine (VIH). La planification de grossesse en présence du VIH a considérablement évolué depuis dix ans. Elle exige l'apport d'une équipe multidisciplinaire, et les dispensateurs de soins aux personnes infectées par le VIH y occupent souvent le premier rang. Il est donc important de disposer de directives claires sur le mode de prestation des soins pendant la planification de la grossesse en présence de VIH. Les directives de pratique clinique sont conçues pour les dispensateurs de soins primaires et spécialisés en matière de VIH, y compris les médecins, les infirmières et les infirmières praticiennes. Les *Lignes directrices* de 2018 contiennent 36 recommandations que les auteurs ont regroupées en cinq normes de soins pour en faciliter l'utilisation. Ils ont également inclus un premier algorithme à utiliser avec chaque patient pour orienter les échanges sur leurs objectifs de reproduction. La grossesse et le rôle de parent sont des expériences de plus en plus normalisées dans la vie des personnes et des couples touchés par le VIH. La conception a déjà été une décision complexe, souvent axée fortement sur la réduction du risque de transmission du VIH, mais les données à jour appuient la transmission de conseils plus universels et une aide à la planification de grossesse en présence du VIH. Il incombe aux dispensateurs de soins aux personnes touchées par le VIH de connaître les particularités de la planification de grossesse auprès de ces patients. Ces conseils sont cruciaux pour optimiser les résultats en santé génésique de toutes les personnes en cause, y compris la prévention des grossesses non désirées.

MOTS-CLÉS : fertilité, grossesse, planification de grossesse, préconception, rôle de parent, supervision clinique, VIH, virus d'immunodéficience humaine



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Pregnancy and parenting are increasingly normalized experiences for those living with and affected by human immunodeficiency virus (HIV). Much of this normalization arises from the same literature that has led to the U = U (undetectable = untransmittable) movement (1). Seminal studies, such as HPTN 052, PARTNER, and PARTNER2 have clear applicability to pregnancy planning in the context of HIV (2–5); what these studies have in common are the questions and reassuring answers about the risk of sexual HIV transmission when effective combination antiretroviral therapy (cART) is used to achieve a sustained undetectable HIV viral load. The results of these studies have changed safer conception counselling in the context of HIV, as the option of condomless sex has become not only a viable consideration for heterosexual couples but also the primary recommended method. This is an ever-evolving field of HIV care, informed by both the science and patient preferences.

In what has firmly been a women-focused^a area of research, the evolution of this field has also led to a greater understanding of men's fertility desires and intentions in the context of HIV. While it has long been reported that women living with HIV in Canada both desire and intend to parent (6,7), similar findings for men have only recently become available (8,9). A 2017 study led by Dr Mark Yudin (9) reported that 45% of study participants—all of whom were biologically male and living with HIV—wished to become parents, and 44% actually intended to become parents.

In light of this progress, a multidisciplinary team recently collaborated on the re-development of the Canadian HIV Pregnancy Planning Guidelines (CHPPG), offering a necessary update of the 2012 publication (10). The CHPPG is a comprehensive, evidence-based clinical practice guideline document that includes 36 recommendations on HIV pregnancy planning in the Canadian context for multiple clinician stakeholders. The guideline is extensive, and it has been recognized that the scope of the CHPPG may result in uptake challenges. As such,

this Clinical Practice Guide concisely outlines the most relevant aspects of the CHPPG and packages the 36 recommendations into five clinical Standards of Care, aimed to support HIV care providers to, more easily, integrate pregnancy planning care and preconception counselling into their existing HIV care approaches for their patients. The intended audience of HIV care providers includes primary care providers and specialty HIV care providers, including doctors, nurses, and nurse practitioners.

IMPORTANT UPDATES SINCE 2012

The 2018 CHPPG reflects the current landscape of pregnancy planning and HIV globally while being cognizant of the Canadian context. The conceptual frameworks of the CHPPG have evolved to reflect a human rights-based approach while continuing to recognize that “recommendations and their implementation must be up-to-date, evidence-based, flexible and ethnoculturally sensitive while also taking into account diverse and intersecting local/population needs and the social determinants of health.” (10 p98)

There are three key scientific updates that HIV care providers should know and incorporate into their practice. First, the CHPPG now explicitly states that delaying the initiation of cART until the second trimester of pregnancy is no longer recommended, but rather cART initiation *before* conception leads to the lowest rate of perinatal transmission of HIV (12). This is consistent with current treatment guidelines advocating for early treatment initiation for all people living with HIV and is based on findings from the French Perinatal Cohort Study (12,13). Further, if the person intending pregnancy is living with HIV, is on effective cART before getting pregnant, and has sustained viral suppression throughout the pregnancy, there is no chance that the baby will be infected with HIV (13).

The most substantial change in the 2018 CHPPG relates to the recommended methods of conception. Condomless sex timed with ovulation within the context of cART and with sustained

^a The authors recognize the importance of gender inclusivity in discussions related to sexual and reproductive health. As such, gender-inclusive language is used throughout this Clinical Practice Guide whenever possible. However, this is limited when reporting on previous literature or publications.

viral suppression is now recommended as a first-line method of safe conception in the context of HIV (when appropriate/feasible). This recommendation is scientifically supported (2–5) and consistent with current patient preferences that have been observed clinically (14,15). It is recommended that condomless sex be timed with ovulation to maximize conception success. The CHPPG recommends delaying the use of condomless sex as a conception method until cART has been initiated for at least 3 months, but preferably 6 months, with a minimum of two viral load measurements below the limit of detection, at least 1 month apart. This recommendation is consistent with sustained viral suppression and is supported by genital secretion HIV reservoir studies, which have found rapid HIV viral shedding in seminal fluid in the period immediately following the start of cART in the vast majority of cases (16,17). This is further supported by the use of integrase inhibitor-based cART regimens, which have rapid initial rates of viral suppression.

The final substantial change in the 2018 CHPPG is clarification regarding the use of HIV pre-exposure prophylaxis (PrEP) in the context of pregnancy planning. When all of the literature on PrEP is considered together, there is relatively little to no advantage to adding PrEP for an HIV-negative person whose cART-adherent partner has a fully suppressed viral load. This conclusion is supported by two cost-effectiveness analyses (18,19) and the landmark U = U studies (2–5). Given the increased awareness of PrEP, the CHPPG recommends PrEP be included in the overall preconception counselling, but it is *not* to be routinely recommended for conception. This recommendation applies to most scenarios in Canada, and throughout the majority of the country, where viral load testing is readily available and frequent clinical visits are possible. However, the CHPPG does acknowledge that there may be instances when the use of PrEP can be considered—for example, in remote areas of Canada with limited access to care and viral load testing, when the partner living with HIV in a serodiscordant relationship is starting cART, or when cART adherence is an issue (20).

GOOD CLINICAL PRACTICE STANDARDS: CONSIDERATIONS FOR IMPLEMENTING THE STANDARDS INTO CARE

The integration of clinical practice guidelines can be challenging. These challenges are often addressable with guidance and support, such as resources and tools. We recognize that for some clinicians, the full implementation of the CHPPG, and accompanying Standards of Care (see Box 1), will only require minor practice changes; for others, pregnancy planning in the context of HIV may be less familiar and require a greater shift in practice.

In this article, we offer practical and clinically applicable details, in addition to a series of resources (e.g., see Figure 1

Box 1: Standards of care

Standard #1: The reproductive goals of people living with HIV should be discussed at the time of diagnosis and at least annually thereafter. Counselling should be based on current science and be individualized, comprehensive, supportive, and nonjudgmental. (Refer to CHPPG recommendations 1, 4, 6, 7, and 8; see Figure 1.)

Standard #2: Contraceptive options should be reviewed with all people living with HIV, who do not intend pregnancy, as soon as possible. If access to contraception counselling cannot be facilitated within the HIV clinic, referral to a suitable provider who can offer such counselling should be made as quickly as possible to prevent unintended pregnancy. (Refer to CHPPG Recommendation 1; see Figure 1.)

Standard #3: When conception is intended, people living with HIV should be offered general preconception health counselling, including the need for folic acid supplementation, the importance of a basic preconception work-up and should be put in touch with prenatal health, mental health, or substance use support services prior to conception, if appropriate. (Refer to CHPPG Recommendations 8, 9, and 10; see Box 2.)

Standard #4: HIV care providers should be familiar with the science to offer counselling on conception options and sexual risk reduction strategies when a person living with HIV wants to conceive. Condomless sex timed with ovulation, with partners living with HIV being on cART with sustained viral suppression, is now recommended as a first line method of safe conception. (Refer to CHPPG Recommendations 16, 20, 22, 23, and 27; see Box 2.)

Standard #5: Following 6 to 12 months of unsuccessful attempted conception using a home-based method, referral to a gynecologist or fertility specialist should be initiated. (Refer to CHPPG Recommendation 25; see Box 2.)

CHPPG = Canadian HIV Pregnancy Planning Guidelines; HIV = human immunodeficiency virus; cART = combination antiretroviral therapy

and Box 2) that have been developed, to facilitate the implementation of the Standards of Care across Canada.

Standard #1: The reproductive goals of people living with HIV should be discussed at the time of diagnosis and at least annually thereafter. Counselling should be based on current science and be individualized, comprehensive, supportive, and nonjudgmental.

The period following HIV diagnosis is a time of immense change in the life of the newly diagnosed person. In the midst of all of this, concerns about parenting are common. Prioritizing a discussion about reproductive

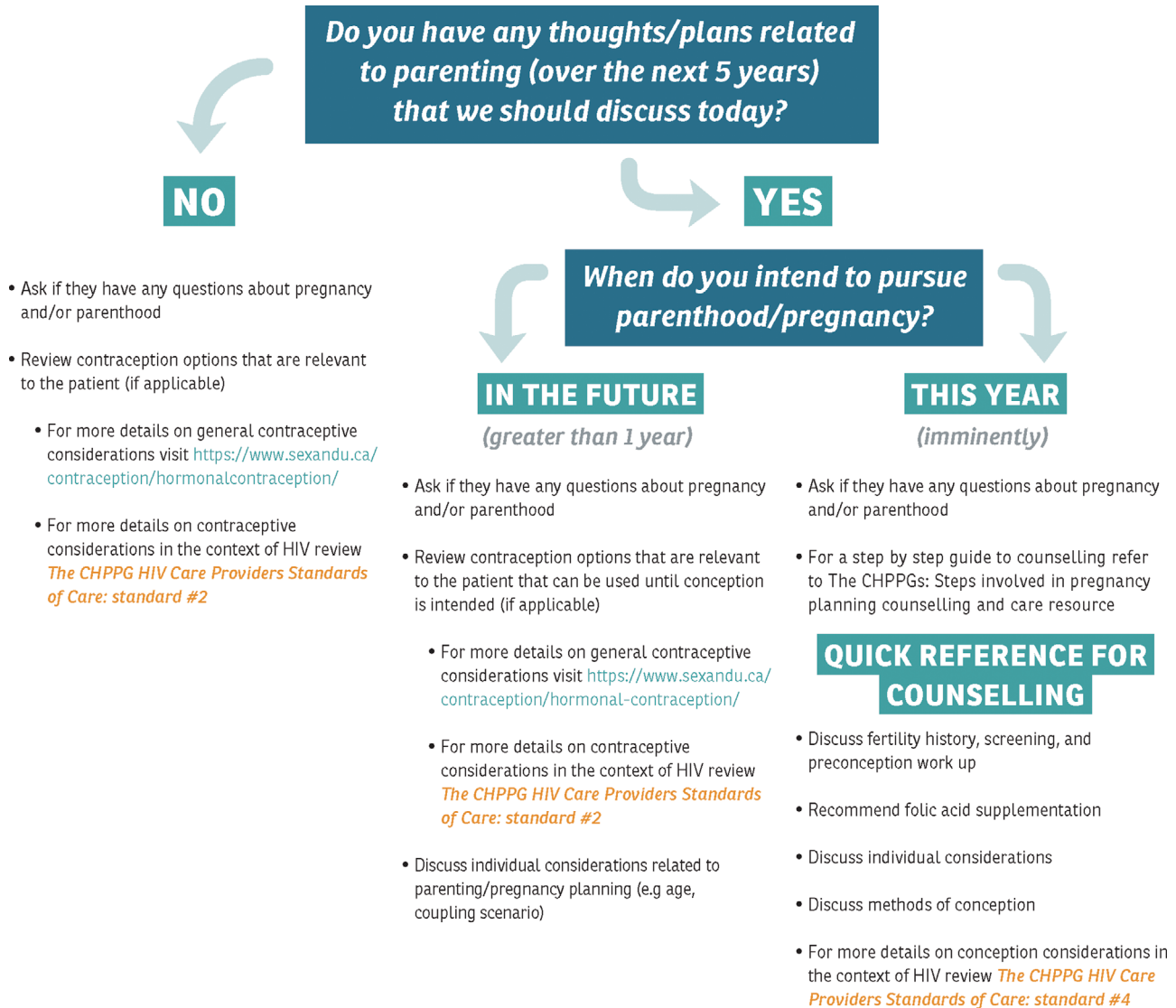


Figure 1: Clinical counselling algorithm, a quick reference that can be used to direct HIV care providers initiating annual preconception counselling with all patients, offers an overview of key points to discuss during reproductive counselling

goals in light of the HIV diagnosis and informing the newly diagnosed person that they can safely become a parent is recommended. This creates an early opportunity for the patient to ask questions about pregnancy and reproduction in the context of HIV, as they integrate the diagnosis into their identity.

Revisiting reproductive goals on an annual basis is recommended. Even if at the time of diagnosis, or subsequently, the person states that they do not wish/intend to become a parent, verifying this annually is suggested. Revisiting reproductive goals allows the HIV care provider to update the person on scientific advancements that may impact pregnancy planning decisions. This supports an informed decision-making process. Clinician selection of who needs reproductive health counselling should be avoided.

Reviewing legal considerations related to HIV may also be an important aspect of pregnancy planning discussions. Despite the scientific advancements that are the foundation for U = U, discussions on how horizontal HIV transmission risk is treated in the legal system, which is not entirely consistent with the science, remain necessary. This is suggested to ensure that prospective parents have accurate information and make a fully informed choice in their pursuit of parenthood. Specifically, people living with HIV should be routinely counselled on the current legal considerations related to HIV non-disclosure. Prospective parents should be aware that in Canada, criminal sanctions can be applied in certain circumstances to individuals with HIV who do not disclose their HIV status. These conversations should be empowering, positive, and supportive despite the serious nature of the

Box 2: Steps involved in pregnancy planning counselling and care for people affected by HIV

STEP 1: Fertility screening (of person intending pregnancy)

Whether HIV positive or negative

FERTILITY HISTORY

Ask if:

- they are having regular menstrual periods
- they have ever been pregnant before, even if it ended in a spontaneous or therapeutic abortion
- they have a history of any gynecological conditions (such as endometriosis), sexually transmitted infections (e.g., chlamydia and gonorrhea) with or without pelvic inflammatory diseases, confirmed sub/infertility, adverse pregnancy outcomes or two or more spontaneous abortions
- **If any abnormality is reported, referral to gynecology or fertility specialist is recommended.**

BLOOD WORK

Order:

- routine HIV blood work (if appropriate)
- CBC
- beta hCG (if any suspicion of pregnancy)
- varicella zoster virus (VZV) Ab (if negative, vaccinate preferably with inactivated vaccine or with live vaccine if not pregnant and can tolerate a live vaccine)
- rubella Ab (if negative, vaccinate if not pregnant and can tolerate a live vaccine)

Possible additional blood work:

- Antimüllerian hormone (AMH) is highly predictive of fertile potential but is not covered in all provinces and is not routinely ordered outside of fertility clinics. It may be helpful but is not essential.

STI TESTING

Order:

- urine chlamydia and gonorrhea, syphilis, hepatitis B s Ag, hepatitis C Ab
- HIV test if HIV negative

COUNSELLING

- Review all medications being taken and consider any changes to those that are not recommended in pregnancy (including cessation or continuation despite recommendations—e.g., antiepileptics). Consider consulting experts in the field.
- Counsel to mark down the first day of menstrual periods on a calendar ASAP and bring that data in to determine cycle length.
- Prescribe 1 mg folic acid to prevent neural tube defects in baby. People with an increased or HIGH RISK for a neural tube defect, including a previous neural tube defect pregnancy in either biological parent, should be prescribed 5 mg. *It is best if this has been taken for 3 months prior to conception/pregnancy.* ([https://www.jogc.com/article/S1701-2163\(15\)30230-9/pdf](https://www.jogc.com/article/S1701-2163(15)30230-9/pdf) for more details).
- Practice harm reduction around smoking, drinking, and other recreational drug use before getting pregnant. Help set up rehabilitation and treatment programs if necessary. The nicotine patch can be given in pregnancy at 7 mg or 14 mg/24 hours.

STEP 2: Fertility screening (of person providing sperm)

Whether HIV positive or negative

FERTILITY HISTORY, TESTING, AND COUNSELLING

Ask if:

- they have ever gotten a person pregnant before

Semen analysis:

- not indicated if there is no history of infertility
- can be done to assess quantity of sperm (if there is a suspicion of infertility) but they are not easily accessible at local laboratories in many provinces

(Continued)

Box 2: Steps involved in pregnancy planning counselling and care for people affected by HIV (Continued)**STI TESTING****Order:**

- urine chlamydia and gonorrhoea, syphilis, hepatitis B s Ag, hepatitis C Ab
- HIV test if HIV negative.

COUNSELLING

- Review all medications being taken to ensure none of them are spermatotoxic (e.g., ribavirin).
- Practice harm reduction around smoking, drinking and other recreational drug use before conception. Help set up rehabilitation and treatment programs if necessary.

STEP 3: Minimizing HIV Transmission**COUNSELLING**

- Counsel that the person living with HIV should be under the care of an HIV care provider and seen regularly.
- Counsel that the person living with HIV should be taking effective combination antiretroviral therapy (cART) for at least 3 months, preferably longer than 6 months, with an undetectable viral load on at least two occasions, at least 1 month apart as an indicator of sustained viral suppression, **prior to attempting conception**.
- Counsel the person/couple regarding:
 1. zero risk of perinatal HIV transmission to the baby if the person intending pregnancy is HIV positive and is on effective cART with a suppressed viral load before getting pregnant and is able to sustain the viral suppression throughout the pregnancy
 2. possible impact of antiretroviral agents on the fetus
 3. zero risk of perinatal HIV transmission if the person intending pregnancy is HIV negative, unless seroconversion occurs in pregnancy
 4. increased risk of perinatal HIV transmission if acute seroconversion does occur during pregnancy

STEP 4: Conception Methods**REVIEW ALL DIFFERENT OPTIONS FOR CONCEPTION:**

1. condomless sex (HIV+ person on cART, full sustained viral suppression)
2. condomless sex timed with ovulation (HIV+ person on cART, full sustained viral suppression)*
3. either above options with pre-exposure prophylaxis (PrEP)—PrEP is recommended if the HIV-positive person just initiated cART or is non-adherent/does not have sustained viral suppression.
4. home sperm insemination with syringe (can be used when the person intending to become pregnant is HIV+ and partner/donor is HIV– but not commonly used anymore)
5. sperm washing with intrauterine insemination (IUI) (in fertility clinic; can be used when person providing sperm is HIV+).
6. other: in vitro fertilization (IVF), intracytoplasmic sperm injection (ICSI), sperm donor, egg donation/gestational carriage
7. adoption

*** Option 2 is now the preferred method of conception**

- More than one conception option is often acceptable and recommendable; however, given the evidence that is now available, referral to a fertility clinic is primarily only warranted for fertility support (e.g., unable to conceive, same-sex couple, or single).
- Remember some options may not always be the most practical based on availability of services, cost, cultural beliefs, personal risk evaluation, or clinical circumstance. However, these points are less relevant in the current era as condomless sex with timed ovulation is the preferred conception method (when applicable).
- The objective of preconception counselling is to help facilitate an informed decision.
- The chosen strategy is based on patient preference.
- Physicians and other health care providers should provide non-judgmental support of the decision of the patient(s) involved.

(Continued)

Box 2: Steps involved in pregnancy planning counselling and care for people affected by HIV (*Continued*)

STEP 5: Supporting conception

COUNSELLING

- Explain that on average it takes 5 to 6 months to get pregnant.
- Explain that the best time to have condomless sex or perform home or assisted sperm insemination is the day before ovulation (time of luteinizing hormone [LH] surge) and the day of ovulation in order to optimize the chance of conception.
- Explain that this is why cycle monitoring in advance is ideal, so the general time of ovulation can be better predicted.

MONITORING OVULATION OPTIONS

- Review options for cycle monitoring (to determine the most likely time of ovulation) to support conception.

Monthly cycle monitoring:

- The patient should mark a calendar with the first day of their menstrual period.
- The patient should track cycles for a few months to monitor the length of cycles (from first day of one to first day of the next period).
- Counsel that ovulating happens around 14 days before the next menstrual cycle. So, in a 28-day cycle, ovulation happens around the 14th day after the first day of the menstrual period.

Other biological changes:

- The patient can monitor for changes in the vaginal discharge, which becomes sticky at the time of ovulation due to hormonal changes between the first and second half of the menstrual cycle (see <https://www.pregnancyinfo.ca/before-you-conceive/fertility/tools-for-understanding-fertility/cervical-mucus-testing/> for more details).
- The patient can use basal body temperature charting, which requires daily temperature monitoring (see <https://www.pregnancyinfo.ca/before-you-conceive/fertility/tools-for-understanding-fertility/basal-body-temperature/> for detailed instructions).
- Counsel that these methods are less efficient than the ovulation predictor supports listed below.

Ovulation predictor supports:

- Ovulation sticks can be purchased (pharmacy, some dollar stores) and used starting about 4 days before ovulation is expected. Follow the instructions provided.
- There are excellent apps to determine peak ovulation (e.g., FLOW, OVIA).
- Offer follow-up visits/phone calls to the individual or couple every 1–2 months to assist in calculating the days of peak ovulation to attempt conception.

STEP 6: Recommended referral timelines

- In the absence of any known risk factors for infertility, the following guidelines can be used for referral for fertility support:
 - If the person intending pregnancy is younger than 35, conception should be attempted every month for 12 months before referral.
 - If the person intending pregnancy is between 35 and 40, conception should be attempted every month for 6 months before referral.
 - If the person intending pregnancy is over 40, conception should be attempted every month for 3 months before referral.
- Following referral, **have the patient(s) return after seeing the fertility clinic as per the usual HIV care and inform the fertility clinic of the blood results. Viral load may be measured more frequently during conception attempts (e.g., q3–4 months).**

STEP 7: Ask if they have any other questions.

Feel free to photocopy this pocket guide and give a copy to the patient(s).

A professionally designed equivalent tool to **Box 2** has been created (HIV Pregnancy Planning Pocket Guide); it is available on the CHPPG website for printout or ordering (www.HIVpregnancyplanning.com).

HIV = human immunodeficiency virus; CBC = complete blood count; hCG = human chorionic gonadotropin

content. Even if referrals will be made for all other aspects of preconception counselling, the counselling on legal implications requires the expertise of an HIV care provider.

The CHPPG supports the ongoing use of a human rights approach to this counselling. The CHPPG states, “holistic consideration of the law and ethics is necessary to ensure that prospective parents affected by HIV are given complete, accurate information to make fully informed choices in their pursuit of parenthood. Pregnancy planning information should be provided in a manner that is empowering, positive, considerate of culture, and attentive to the possibility of stigma, surveillance, and judgment people with HIV experience, particularly in the context of parenthood.” (10 p102). The tone of the discussion is paramount. What was once often a bleak, judgmental, and fear-based discussion can now be an opportunity for patients, and their partners, to feel empowered about their reproductive choices and rights.

For many people living with HIV, and their partners, a major consideration in their pregnancy planning remains the risk of HIV transmission to uninfected partners and offspring. While the science supports a zero risk of HIV transmission, under optimal circumstances, to both the partners and offspring, these fears are real and should be explored with patients in a meaningful way. The CHPPG states that: “the ethical obligation of care providers is to ensure comprehensive counselling on and access to preferred risk reduction techniques for the prospective parent(s)” (10 p102) (Box 2).

Annual counselling can stop if the person no longer has reproductive potential (i.e., biological or medical/surgical interventions). If the reproductive goals of the person do not include actively trying to conceive, contraception should be discussed, if applicable (see Standard #2). If comprehensive reproductive counselling is required, a follow-up visit is recommended with the HIV care provider or by referral to an expert.

Annual discussions can be difficult to remember during routine clinical visits. In order to support the implementation of this Standard of Care, the use of a clinical reminder embedded into existing electronic medical record may be helpful (21). However, this passive tool will likely only be effective if the HIV care provider recognizes reproductive counselling as part of their professional role. Speaking with patients is likely the most effective way for an HIV care provider to become familiar with the importance of basic reproductive counselling for that individual living with HIV.

Standard #2: Contraceptive options should be reviewed with all people living with HIV, who do not intend pregnancy, as soon as possible. If access to contraception counselling cannot be facilitated within the HIV clinic, referral to a suitable provider who can offer such counselling should be made as quickly as possible to prevent unintended pregnancy.

Contraception is an important consideration for all people who have the potential of achieving a pregnancy. It is recognized that contraception is often considered a cis-gendered, heterosexual issue only, however, care providers should avoid assumptions about the sexual partners of their patients, when appropriate, and instead initiate open conversations about contraception with all patients, regardless of biological sex or gender, sexual orientation or identity, as all people should feel empowered to control their fertile potential.

Many HIV care providers throughout Canada currently offer contraception counselling. Condoms are a widely recognized barrier contraceptive that should be discussed with all patients. Given the known drug-drug interactions between daily-use hormonal contraceptives and some anti-retroviral medications, specifically protease inhibitors, HIV care providers are encouraged to familiarize themselves with this information when counselling patients. HIV care providers who wish to offer contraceptive counselling should be familiar with the variety of contraceptive options available in Canada, including intrauterine devices (IUDs), oral hormonal contraceptives, and quarterly injectable hormonal contraceptives. The Society of Obstetricians and Gynaecologists of Canada (SOGC) has developed a comprehensive resource on modern contraceptives (called *It's a Plan*), which can be found at <https://www.itsaplan.ca/>.

When discussing contraception options, all options should be reviewed with the patient(s) to allow an informed decision about which option is best for them. IUDs, either a levonorgestrel-releasing intrauterine system or a copper IUD, are the preferred contraception choice recommended by family planning groups and the SOGC. IUDs are safe for use by people living with HIV and are an appealing option as they eliminate the need for additional daily medications. IUD insertion is a specialized skill and requires a referral to a gynecologist or trained primary care provider. When offering counselling on contraception, the historical concerns related to the increased risk of HIV transmission with the injectable hormonal contraception, medroxyprogesterone acetate (Depo-Provera, or DMPA) should be alleviated. It was previously reported that the risk of HIV transmission was 40%–50% higher and bidirectional between sexes if HIV viremia was present (22) when using DMPA. Fortunately, the highly anticipated results of the Evidence for Contraceptive Options and HIV Outcomes (ECHO) study provide reassurance for the safe use of injectable contraception (23). In ECHO, HIV-negative women were randomly assigned to use one of the three most commonly used contraceptive methods: injectable DMPA, a copper IUD, or a levonorgestrel (LNG) implant. The study aimed to detect a 50% increase in HIV incidence in women between the contraceptive choices; the results have not detected this increased risk between any

of the contraceptive methods. This finding is widely being publicized as sufficient evidence to eliminate any concerns about the use of DMPA in the context of HIV.

If access to contraception counselling cannot be facilitated within the HIV clinic, referral to a suitable provider who can offer such counselling and provision should be made as quickly as possible to prevent unintended pregnancy. Patients should be strongly encouraged to use condoms while awaiting referral and subsequent initiation of effective contraceptive use. Referrals should be limited to providers who are familiar with HIV to avoid any experiences of stigma related to HIV, which are common in healthcare settings. The CHPPG team has developed a list of national resources for HIV and pregnancy planning, including expert gynecologists, fertility clinics, and community-based agencies. It can be found at www.hivpregnancyplanning.com.

It should be noted that the World Health Organization recommends dual contraception methods, with a condom, to protect against sexually transmitted infections (STIs) and effective contraception to prevent pregnancy in all circumstances and not just in the absence of effective contraceptive use (24).

Standard #3: When conception is intended, people living with HIV should be offered general preconception health counselling, including the need for folic acid supplementation, the importance of a basic preconception work-up and should be put in touch with prenatal health, mental health, or substance use support services prior to conception, if appropriate.

When conception is intended, HIV care providers should offer counselling on a few general health issues to support people in achieving optimal preconception and pregnancy health. This is particularly important if the patient is known *not* to have a primary care provider in addition to their HIV care provider. Lack of a primary care provider may be more common than expected, even in the Canadian context. The Canadian HIV Women's Sexual and Reproductive Health Cohort Study, CHIWOS, has found that 54.6% of participants reported at least one gap in their care, with reproductive discussions being the most common gap (60.1%) (25). Details on what to discuss when offering general preconception health counselling are provided in **Box 2**, Step 2.

Preconception and pregnancy health: The SOGC recommends that a person initiate folic acid supplementation 3 months before becoming pregnant to prevent neural tube defects (26). The recommended dose of folic acid is 1 mg per day, and there is no reason, related to HIV, to give the increased dose of 5 mg per day. Various drug plans cover different doses of folic acid or prenatal vitamins (e.g., the Ontario Drug Benefit covers folic acid 5 mg, non-insured health benefits cover Materna, and many private drug plans

cover PregVit). It is recommended that drug coverage be considered when discussing folic acid supplementation. For those people without prescription coverage, 1 mg of folic acid, which is available over the counter, is the lowest cost option to ensure adequate supplementation.

Routine bloodwork is recommended prior to conception as a preconception work-up regardless of whether or not the person intending pregnancy is living with HIV (i.e., in serodiscordant couples). In addition to standard HIV bloodwork (if applicable), a preconception work-up should include STI screening including testing urine for chlamydia and gonorrhea, and serum testing for syphilis, and hepatitis B surface Ag, hepatitis C Ab, and verifying immune status to varicella zoster virus and rubella, and a baseline beta hCG test (if appropriate) as contraception is often discontinued before *actively* trying to conceive. An HIV test should also be done if the person is thought to be HIV negative. It is often helpful to do a complete blood count (CBC) as it is common to identify iron deficiency anemia, which can be easily addressed if present.

Partner's preconception health: When a partner will be involved in trying to conceive (i.e., in heterosexual couples) routine bloodwork is recommended prior to conception as well. Similar to what is recommended above, a preconception work-up should include STI screening, including urine testing for chlamydia and gonorrhea, as well as syphilis, hepatitis B surface Ag, and hepatitis C Ab. An HIV test should also be done if the person is thought to be HIV negative.

Individual considerations: The CHPPG is informed by a human rights approach and recognizes the importance of harm reduction. Based on these principles, regardless of individual considerations or lifestyle choices, no person should be denied preconception counselling. As such, all people should be counselled in a non-judgmental way about substance use, mental health, and social support. Referral to appropriate agencies is ideal before conception so that the person can identify their needs and goals in these areas before pregnancy is achieved.

Standard #4: HIV care providers should be familiar with the science to offer counselling on conception options and sexual risk reduction strategies when a person living with HIV wants to conceive. Condomless sex timed with ovulation, with partners living with HIV being on cART with sustained viral suppression, is now recommended as a first line method of safe conception.

Comprehensive preconception counselling in the context of HIV focuses primarily on the applicable conception methods and their associated risk of horizontal HIV transmission. Thorough counselling about all conception methods and horizontal HIV transmission risk reduction techniques should

be provided before attempting conception (**Box 2**, Step 3). This will support an informed choice about which conception method is most appropriate to each particular situation. The CHPPG offers comprehensive recommendations regarding conception methods based on coupling scenarios. The following section summarizes the critical science related to options for conception and horizontal HIV transmission risk reduction.

Condomless sex alone or timed with ovulation: For heterosexual couples, the CHPPG now recommends attempting condomless sex for 6 to 12 months when the person(s) living with HIV is/are on cART with sustained virologic suppression. Condomless sex timed with ovulation is the preferred option; it refers to timing acts of condomless sex to the period of peak fertility during the menstrual cycle (at the time of ovulation) and thereby maximizing the chance of conception. Even when using condomless sex timed with ovulation, patients should be counselled that on average, it takes 5 to 6 months to conceive. Condomless sex should be avoided until the person(s) with HIV has been on cART for at least 3 months, but preferably 6 months, with at least two viral load measurements at least one month apart below the limit of detection. This updated recommendation reflects the current evidence substantiating that such a person is not sexually infectious.

Timing ovulation is a skill that patients can be taught or learn independently (**Box 2**, Step 5). A helpful resource, *How to Time Ovulation: Options and Considerations*, is available for free download at www.hivpregnancyplanning.com. Patients with histories of infertility should be referred directly to a gynecologist and/or a fertility specialist as soon as possible. For those using condomless sex as a method of conception, the HIV-negative person should be counselled about clinical signs of seroconversion and should have regular testing, such as every 6 months, for HIV seroconversion to avoid delay in diagnosis, in cases of possible non-adherence.

Considerations for the addition of PrEP: The CHPPG does not recommend the routine use of PrEP to reduce the risk of horizontal HIV transmission in a situation where the person with HIV is consistently using cART with sustained viral suppression. The literature suggests that the added benefit of PrEP to prevent horizontal HIV transmission in such a scenario is limited. However, if these criteria cannot be confirmed, or there is a question and possibility of cART non-adherence and lack of viral suppression, PrEP is recommended. Examples in which PrEP use may be recommended in the Canadian context include in remote areas of Canada with limited access to care and viral load testing, scenarios in which the partner living with HIV in a serodiscordant relationship is just starting cART but wishes to proceed with conception imminently, or when cART adherence is an issue (20).

The CHPPG recommends that such a decision be “individualized and take into account each couple’s clinical

situation, tolerance of risk, personal choice, as well as ability to afford PrEP” (10 p107). PrEP is covered by many private and public drug plans in Canada but not all. This scenario is also an indication for ongoing use of PrEP if condomless sex continues following conception, to avoid potential seroconversion during pregnancy, particularly if the pregnant partner is HIV negative. If indicated, the ongoing use of PrEP is safe when pregnant and breast/chest feeding (27).

Other methods of conception and HIV transmission risk reduction: The CHPPG describes and makes recommendations about the use of additional possible methods of conception, and their associated risk of horizontal HIV transmission. Certain methods of conception are mostly or only applicable in certain coupling scenarios. In some circumstances, the conception method may fully eliminate the risk of horizontal HIV transmission, such as the use of home insemination when the partner being inseminated is the person who is living with HIV in a serodiscordant scenario.

For all methods of conception, the aforementioned literature on the risk of sexual infectivity of a person on cART with full virologic suppression (i.e., U = U studies) remains relevant. This is also the case when the use of a surrogate would be required. Regardless of whether or not a person is considering seeking the use of assisted reproductive technology because of a coupling scenario, existing fertility challenges, or because of personal preference, people should be counselled that the current evidence does not suggest that these fertility treatments further reduce the risk of horizontal HIV when the criteria of sustained viral suppression on cART is achieved.

People should be informed that the use of assisted reproductive technology will likely have some associated cost that varies by procedure and province, and that may be a consideration in their decision making. For those who require the use of assisted reproductive technology to conceive due to the coupling scenario (e.g., single woman or same-sex couple), the additional cost associated with the purchase of donor gametes—and possible barriers due to Canadian standards on the use of donor tissues for human reproduction—are also possible. This is a highly specialized area that requires consultation with a fertility specialist. The CHPPG team has developed a resource that lists recommended fertility clinics across Canada and can be found at www.HIVpregnancyplanning.com. Aside from those who require assisted reproductive technology to conceive due to coupling scenario, referral to a fertility specialist is likely only warranted if there is evidence of clinical infertility.

The above scope of preconception counselling is often not feasible at a routine HIV care visit. For patients who intend to conceive, a follow-up visit specifically for pregnancy planning counselling is recommended. If applicable, partners should be encouraged to attend the pregnancy planning visit. To facilitate the integration of this Standard of Care

for those who may be less familiar with pregnancy planning counselling, a companion pocket tool with step-by-step guidance (containing the same details as **Box 2**), as well as other useful resources for clinicians (and patients) can be found on the CHPPG website: www.HIVpregnancyplanning.com. Ideally, familiarity with the science will allow all HIV care providers to begin the above discussions about risk reduction with patients. If necessary, referral to an expert in infectious diseases and reproduction may be recommended as follow-up after initial discussions between patients, partners, and HIV care providers.

Standard #5: Following 6 to 12 months of unsuccessful attempted conception using a home-based method, referral to a gynecologist or fertility specialist should be initiated.

HIV care providers may be familiar with the recommendation for the general public, stating that conception should be attempted for 12 months without success prior to fertility investigation. However, the CHPPG recommends referral to a gynecologist or fertility specialist after as little as 6 months of failed conception with home-based conception attempts (**Box 2**, Step 6). This recommendation is based on some studies that have suggested a correlation between HIV and infertility (28,29) but more importantly, as those who have acquired HIV sexually may be at risk of compromised fertility (e.g., Fallopian tube blockage) caused by a history of other STIs. While these data are not immediately generalizable to a Canadian setting, expert observation in the field supports a higher prevalence of impaired fertility in the context of HIV. As such, the CHPPG goes on to suggest that it is reasonable to begin fertility investigation sooner than 6 months if there is clinical suspicion of sub-optimal fertility, even if just based on HIV status. There may be additional considerations related to risk factors associated with infertility. Age is a very important consideration for the person intending pregnancy. It is generally recommended that people under 35 years of age who have no known risk factors try for 12 months, those over age 35 years but less than 40 years of age try for 6 months, and anyone over age 40 years be referred immediately, or 3 months after, initiating home-based conception attempts. This is particularly important if there is any indication of sub-optimal fertility, such as irregular periods or challenges with ovulation tracking. Additional risk factors for infertility should be considered, such as a history of STIs, including chlamydia and gonorrhea with or without pelvic inflammatory disease, and endometriosis. For more information on considerations related to infertility, visit the SOGC's "Resources" web page at <https://www.pregnancyinfo.ca/resources/before-you-conceive/#fertility>. As previously noted, the CHPPG team has developed an online list of resources by province which includes

recommended fertility clinics across Canada and can be found at www.HIVpregnancyplanning.com.

CONCLUSIONS

The implementation of any clinical practice guideline can be daunting, but evidence supports the value of such guidelines to patients and providers (30). To address the known challenges with implementation of the CHPPG, this Clinical Practice Guide has been developed to complement the comprehensive 2018 full guideline. This guide is concise, practical, yet thorough so that HIV care providers can easily implement the CHPPG recommendations in their day-to-day HIV practice. At a time when people and couples living with and affected by HIV are considering parenthood more than ever, the CHPPG and the accompanying resources are essential clinical tools intended to better support management and the reproductive planning of all people living with HIV in Canada. Whether pregnancy is desired or unintended, people living with HIV should be supported in achieving their reproductive goals with the support of informed clinicians. Using the CHPPG to standardize comprehensive annual reproductive health care as a routine aspect of HIV care across Canada provides the best possible care to our patients, and positions us to be global leaders in actualizing the sexual and reproductive health and rights of people living with HIV.

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REFERENCES

1. Prevention Access Campaign. Undetectable = untransmittable [Internet]. New York: Prevention Access Campaign; c2018 [cited 2018 Dec 15]. Available from: www.preventionaccess.org/.
2. Safren SA, Mayer KH, Ou SS, et al. Adherence to early antiretroviral therapy: results from HPTN 052, a phase III, multinational randomized trial of ART to prevent HIV-1 sexual transmission in serodiscordant couples. *J Acquir Immune Defic Syndr*. 2015;69(2):234–40. <https://doi.org/10.1097/QAI.0000000000000593>. *Medline:26009832*
3. Fleming TR, Cohen MS, Chen YQ, et al. Antiretroviral therapy for the prevention of HIV-1 transmission. *N Engl J Med*. 2016;375(9):830–9. <https://doi.org/10.1056/NEJMoa1600693>. *Medline:27424812*
4. Rodger AJ, Cambiano V, Bruun T, et al. Sexual activity without condoms and risk of HIV transmission in serodifferent couples when the HIV-positive partner is using suppressive antiretroviral therapy. *JAMA*. 2016;316(2):171–81. <https://doi.org/10.1001/jama.2016.5148>. *Medline:27404185*
5. Rodger AJ, Cambiano V, Bruun T, et al. Risk of HIV transmission through condomless sex in MSM couples with suppressive ART: the PARTNER2 study extended results in gay men. 22nd International AIDS Conference (AIDS 2018); 2018 Jul 23–27; Amsterdam, NL. Late breaker oral abstract WEAX0104LB. <http://programme.aids2018.org/Abstract/Abstract/13470>.
6. Ogilvie G, Palepu A, Remple V, et al. Fertility intentions of women of reproductive age living with HIV in British Columbia, Canada. *AIDS*. 2007;21(Suppl 1):S83–8. <https://doi.org/10.1097/01.aids.0000255090.51921.60>. *Medline:17159593*
7. Loutfy MR, Hart TA, Mahammed SS, et al. Fertility desires and intentions of HIV-positive women of reproductive age in Ontario, Canada: a cross-sectional study. *PLoS One*. 2009;4(12):e7925. <https://doi.org/10.1371/journal.pone.0007925>. *Medline:19997556*
8. DiGiometio JN, Antoniou T, Kristman V, et al. Understanding the fertility desires and intentions among HIV-positive men living in Ontario: survey instrument development and validation. *J Int Assoc Provid AIDS Care*. 2019;18:1–8. <https://doi.org/10.1177/2325958219831018>. *Medline:30803298*
9. Yudin MH, Kennedy VL, Bekele T, et al. Attitudes toward use of fertility services among HIV-positive men living in Ontario (Abst). Canadian Fertility and Andrology Society (CFAS) 64th annual meeting (2018); 2018 Sep 13–15; Montreal, PQ.
10. Loutfy M, Kennedy VL, Poliquin V, et al. No. 354-Canadian HIV pregnancy planning guidelines. *J Obstet Gynaecol Can*. 2018;40(1):94–114. <https://doi.org/10.1016/j.jogc.2017.06.033>. *Medline:29274714*
11. Poliquin V, Loutfy M, Kennedy VL, Yudin M. A well-deserved update to the Canadian HIV pregnancy planning guidelines. *J Obstet Gynaecol Can*. 2018;40(1):84–5. <https://doi.org/10.1016/j.jogc.2017.11.031>. *Medline:29274712*
12. HHS Panel on Treatment of HIV-Infected Pregnant Women and Prevention of Perinatal Transmission. Recommendations for use of antiretroviral drugs in pregnant HIV-1-infected women for maternal health and interventions to reduce perinatal HIV transmission in the United States. Washington, DC: US Department of Health & Human Services; c2018 [updated 2019 Sep 13; cited 2018 Dec 10]. Available from: <http://aidsinfo.nih.gov/contentfiles/lvguidelines/PerinatalGL.pdf>.
13. Trickey A, May MT, Verheschild J-J, et al. Survival of HIV-positive patients starting antiretroviral therapy between 1996 and 2013: a collaborative analysis of cohort studies. *Lancet HIV*. 2017;40(8):e349–56. [https://doi.org/10.1016/S2352-3018\(17\)30066-8](https://doi.org/10.1016/S2352-3018(17)30066-8).
14. Kennedy VL, Collins M, Yudin MH, et al. Exploring the factors considered by people living with HIV and their partners during preconception. *J Int Assoc Provid AIDS Care*. 2017;16(3):239–46. <https://doi.org/10.1177/2325957416682089>. *Medline:28485707*
15. Loutfy M, Kennedy VL, Sanandaji M, et al. Pregnancy planning preferences among people and couples affected by human immunodeficiency virus: piloting a discrete choice experiment. *Int J STD AIDS*. 2018;29(4):382–91. <https://doi.org/10.1177/0956462417728188>. *Medline:28872418*
16. Shetha PM, Kovacs C, Kemale KS, et al. Persistent HIV RNA shedding in semen despite effective antiretroviral therapy. *AIDS*. 2009;23(15):2050–4.

- <https://doi.org/10.1097/QAD.0b013e3283303e04>.
Medline:19710596
17. Osborne, BJ, Sheth PM, Yi TJ, et al. Impact of antiretroviral therapy duration and intensification on isolated shedding of HIV-1 RNA in semen. *J Infect Dis.* 2013;207(8):1226–34. <https://doi.org/10.1093/infdis/jit026>. Medline:23329849
 18. Letchumanan M, Coyte PC, Loutfy M. An economic evaluation of conception strategies for heterosexual serodiscordant couples where the male partner is HIV-positive. *Antivir Ther.* 2015;20(6):613–21. <https://doi.org/10.3851/IMP2956>. Medline:25849113
 19. Leech AA, Burgess JF, Sullivan A. Cost-effectiveness of preexposure prophylaxis for HIV prevention for conception in the United States. *AIDS.* 2018; 32(18):2787–98. <https://doi.org/10.1097/QAD.0000000000002014>. Medline:30234602
 20. Heffron R, Ngure K, Odoyo J et al. Pre-exposure prophylaxis for HIV-negative persons with partners living with HIV: uptake, use, and effectiveness in an open-label demonstration project in East Africa. *Gates Open Res.* 2017;1:3. <https://doi.org/10.12688/gatesopenres.12752.1>. Medline:29355231
 21. Williams EC, Achtmeyer CE, Kivlahan DR, et al. Evaluation of an electronic clinical reminder to facilitate brief alcohol-counseling interventions in primary care. *J Stud Alcohol Drugs.* 2010;71(5):720–5. <https://doi.org/10.15288/jsad.2010.71.720>. Medline:20731977
 22. Heffron R, Donnell D, Rees H, et al. Use of hormonal contraceptives and risk of HIV-1 transmission: a prospective cohort study. *Lancet Infect Dis.* 2012;12(1):19–26. [https://doi.org/10.1016/S1473-3099\(11\)70247-X](https://doi.org/10.1016/S1473-3099(11)70247-X). Medline:21975269
 23. International AIDS Society. ECHO study finds high rates of HIV and STIs among women in trial countries (press release) [Internet]. 10th IAS Conference on HIV Science (IAS 2019); 2019 Jul 21–24; Mexico City. Geneva: International AIDS Society; 2019 [cited 2019 Aug 6]. Available from: <https://mailchi.mp/ias2019/echo-study?e=cce6a62396>.
 24. World Health Organization. Contraception. https://www.who.int/reproductivehealth/publications/family_planning/en/ (Accessed January 10, 2019).
 25. O'Brien N, Godard-Sebillotte C, Skerritt L, et al. Assessing gaps in comprehensive HIV and women's health care across a typology of care for women living with HIV in Canada (Abst). 10th IAS Conference on HIV Science (IAS 2019); 2019 Jul 21–24; Mexico City. Geneva: International AIDS Society.
 26. Society of Obstetricians and Gynaecologists of Canada (SOGC). Folic acid for preconception and pregnancy (fact sheet). Ottawa: SOGC; 2009 Nov [cited 2018 Dec 15]. Available from: http://pregnancy.sogc.org/wp-content/uploads/2014/05/PDF_folicacid_ENG.pdf.
 27. Heffron R, Pintye J, Matthews LT, Weber S, Mugo N. PrEP as peri-conception HIV prevention for women and men. *Curr HIV/AIDS Rep.* 2016;13(3):131–9. <https://doi.org/10.1007/s11904-016-0312-1>. Medline:26993627
 28. Marston M, Zaba B, Eaton JW. The relationship between HIV and fertility in the era of antiretroviral therapy in sub-Saharan Africa: evidence from 49 demographic and health surveys. *Trop Med Int Health.* 2017;22(12):1542–50. <https://doi.org/10.1111/tmi.12983>. Medline:28986949
 29. Bunjan L, Serserie M, Moinard N, et al. Decreased semen volume and spermatozoa motility in HIV-1 infected patients under antiretroviral treatment. *J Androl.* 2007;28(3):444–52. <https://doi.org/10.2164/jandrol.106.001529>. Medline:17215546
 30. Graham ID, Harrison MB. Evaluation and adaptation of clinical practice guidelines. *Evid Based Nurs.* 2005;8(3):68–72. <https://doi.org/10.1136/ebn.8.3.68>. Medline:16021701